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901 - 15TH STREET, N.W.
WASHINGTON, D.C. 20005-2301
(202) 371-6000
FAX: (202) 371-6279

Writer's Direct Dial:
202-371-6326

August 27, 1999

BY HAND DELIVERY

Ms. Magalie Roman Salas
Secretary
Federal Communications Commission
445-12th Street, S.W., TW-A32
Washington, D.C. 20554

Re: WT Docket No. 98-205

Dear Ms. Salas:

On August 27, 1999, the attached two news articles were sent to Mr. Ari Fitzgerald, Legal Advisor to Chairman Kennard, on behalf of BellSouth. They relate to an *ex parte* meeting held on August 25, 1999, on the spectrum cap as related to wireless problems and future services plans.

Should any questions arise concerning this matter, please direct them to the undersigned.

Respectfully submitted,

David R. Siddall

DRS/smb
Attachments

BUSINESS
AUGUST 23, 1999 VOL. 154 NO. 8

Why Your Cell Phone Stinks...

Corporate egos and a free market put the U.S. behind the curve--and the Finns

BY MARYANNE MURRAY BUECHNER

Here in the U.S., we've got software gods, Web commerce wizards and computer-chip kings. But when it comes to wireless technology, the Finns rule. Just look at what they can do with a cellular phone: buy a Coke from a vending machine. Run a car wash. Zap a digital picture to a friend. On this side of the Atlantic, we're just glad when our calls aren't cut off midsentence.

And it's not just the Finns' phones we fancy. The Swedes use theirs to pay utility bills. The French use them to check flight schedules, reserve hotel rooms and scan the traffic along Le Peripherique. This month marks the birth of the mobile video phone. Where? Japan.

The U.S. has lagged in cell-phone technology for the better part of this decade. While two-way text messaging over cell phones has for years been a standard service from London to Lisbon, and the chat method of choice for teenagers in Tokyo, only a tiny number of users in the U.S. have the feature. U.S. wireless carriers are on the cusp of offering Internet access; overseas, it's already happening. Cell phones as wireless modems for laptops? Works great--in Europe.

Why are we so deprived? One big reason: the whizziest stuff you can do with a cell phone requires a digital network, and the Europeans had a three-year head start implementing theirs. Moreover, they chose one network technology: gsm (Global System for Mobile communications). The use of a single standard puts them in a much better position to embrace the next big thing in wireless.

The Finns in particular have benefited

TELECOM: Why Your Cell Phone Stinks

Enough!: Joshua Quittner has had it with cellfish behavior

TIME ARCHIVES
A Good Call
A global mobile phone standard may be in sight (April 5, 1999)

Peace at Hand for Mobile Phone Formats?
But a new agreement also means no clear winner (TIME Digital, February 22, 1999)

WEB RESOURCES
Wireless Week
The latest news on the wireless industry

How Do Cell Phones Work?
Information guide explaining cellular technology

The Finns in particular have benefited from the nearly demonic devotion of one of their country's leading companies, Nokia, to cell-phone technology. Once a clunky national conglomerate, Nokia is the world leader in cell phones, and last year sold $9.5 billion worth. So far this year sales are up 50%; the stock price is up 40%, to about $86.

Going digital was a much rockier road in the U.S., mainly because the FCC chose to let competing technologies duke it out in the market. The result: Qualcomm, Ericsson and others squabbled over whose standard would "win." None did, so we're left with a hodgepodge of incompatible networks and a gaggle of abbreviations (GSM, CDMA, TDMA, IDEN) that are not only confusing but also confining, restricting us to a particular carrier's coverage area and delaying the roll-out of advanced services.

While the worst growing pains seem to be over, complaints about service continue. Mark Meyer, a lawyer and constant cell-phone user from Dobbs Ferry, N.Y., spends three months a year in Romania on business. He has two cell phones--one from AT&T for the States, the other from Romanian GSM carrier Connex. "You never lose a signal in Bucharest," says Meyer, "and the signal is always clear." But in New York, he can name five different spots along his 26-mile commute from Westchester to Wall Street where his phone will go dead every time. "It's maddening," he says. "We have to have a problem in New York?"

To be fair, the top U.S. carriers have a much bigger customer base spread out over a lot more territory than, say, a telecom in Central Europe. And here's another excuse: Americans, by and large, are not desperate for cutting-edge cell phones. They have fixed phone service that's cheap and ubiquitous. Demand for digital cell phones is a lot stronger in Europe and Asia, where land lines are much more expensive (thanks to the hated PTTs--Postal, Telephone and Telegraph monopolies) and where digital capabilities like exchanging text messages ("Meet me at the cafe") have become culturally ingrained. Mobiles have become so popular in Finland--57% of the population have one, the highest penetration in the world--that the colloquial term for one is kannykka, or kanny, which means "palm of the hand."

The same love affair is going on in

Japan. Not even a player in this industry five years ago, Japan is expected to steal Europe's lead come March 2001, the target date for deployment of a high-speed network capable of moving wireless data as fast as 2 mbps. The so-called wideband CDMA network (Code Division Multiple Access) will be an exponential leap from the 9.6-kbps speeds of current digital networks. Europe is expected to upgrade its system to high-speed data services a few months after Japan (making an interim jump to 384 kbps sometime in between). As for the U.S.? We'll be lucky to get there by 2003.

The U.S. is beginning to close the gap on the feature side. Sprint PCS announced last week that starting late September, its customers will be able to use their phones to access Web content specially formatted for cell-phone screens and check their Web-based e-mail. The French and Belgians have been doing that for only six months. AT&T (whose earlier PocketNET service was limited) and other U.S. carriers are moving forward with similar plans. MORE>>

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August 19, 1999

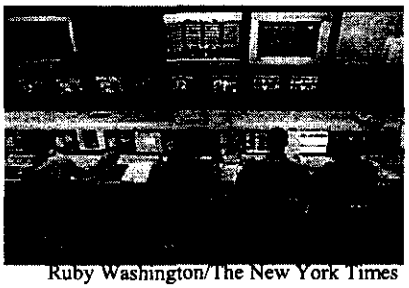
Too Many Phones, Too Little Service

As Service Demands grow, Carriers Are Looking for Ways to Keep up

By CATHERINE GREENMAN

In case you haven't noticed, this country's 300 or so **wireless** telecommunications companies are eager for phone users to cut the cord on their wired phones and go completely mobile.

Leading **wireless** carriers like AT&T **Wireless**, Sprint PCS, Bell Atlantic Mobile and BellSouth are encouraging "bucket plans," in which subscribers pay flat monthly rates for as much as 1,500 minutes of cell phone time.



Ruby Washington/The New York Times

Workers at the Bell Atlantic Network Operations Control Center in Bedminster, N.J., monitor the company's mobile system.

According to the Cellular Telecommunications Industry Association, a trade group based in Washington, the pricing plans, which in many cases are better than long distance rates for wired phones, are working. The group estimates the number of cellular phone users in this country to be near 77 million, with more than 37,500 people signing up for **wireless** phone service each day. And these users are talking more than ever before.

But for every college-bound student who has just purchased 1,000 minutes a month of talk time, there is a cell phone user out there like Stephanie Rudolph Soderberg, a New York City resident who signed on to AT&T's Digital One Rate plan more than a year ago. When asked if she was satisfied with her cell phone service, she replied: "What service? I have no service."

Mrs. Rudolph Soderberg said that every time she tries to call her husband, Bob Soderberg, an electrical

engineer who works mostly outdoors in the city, she hears a fast busy signal, indicating that the call cannot be completed because there is too much traffic on the phone network.

"I take it very personally," she said. "I'm starting to think it's me, maybe something about my body that obstructs calls."

Related Article
Staying Loud and Clear
(August 19, 1999)

While no one knows the precise number of calls that are not completed, fade in and out or get cut off midconversation, such incidents are increasingly common complaints among **wireless** users. And they raise an important question: As successful as **wireless** companies have been in attracting subscribers, what are they doing to keep them happy?

In cities like New York, Los Angeles and Seattle, where cell phone use is among the highest in the country, incomplete or disconnected calls often occur because there are too many conversations for the limited number of channels within a **wireless** carrier's network. Buildings also greatly interfere with the transmission of cell phone signals. In less populated suburban and rural areas, transmission failures occur because the **wireless** networks have yet to be fully built, leaving holes in coverage areas.

The simple solution to these problems is to increase the number of cell sites -- the antennas and base station equipment that send and receive cellular signals. And **wireless** carriers, responding to the complaints of cell phone users, have, in fact, escalated the construction of cell sites. The Cellular Telecommunications Industry Association estimates that as of December 1998, there were more than 65,000 cell sites in the United States, a 28 percent increase over the previous year.

Jane O'Donaghue, a spokeswoman for AT&T, whose digital **wireless** network had difficulty sustaining the initial demand brought on by the carrier's Digital One Rate calling plan, said the company would spend more than $2 billion on its **wireless** infrastructure in 1999. At Sprint PCS, which has 11,000 sites in 280 markets, Tom Murphy, a spokesman, said the company would spend more than $1.5 billion on coverage and capacity this year.

"The big fix is for the carriers to go out and spend the money on building cell sites" said Matt Hoffman, an analyst with Dataquest, a research company in San Jose, Calif. "But they also have to factor in how much that will improve coverage. They can try and cover you in an elevator, but you could also wait until you get downstairs. How much adding a cell site will

increase customer satisfaction is tough for the carriers to grasp."

Even with huge expenditures on infrastructure, **wireless** companies face an uphill battle to achieve better service coverage. There are a number of obstacles to overcome. The low signal strengths inherent in the newer digital **wireless** networks, for example, are the source of a slew of coverage problems.

A **wireless** phone works by transmitting and receiving radio signals to and from the nearest cell site. As the user travels from one cell to the next, the system hands off the signal so that service is uninterrupted. Every **wireless** carrier has a designated chunk of the radio spectrum, which it divides into cells.

A typical cell in an urban area will handle about 100 channels, depending on the **wireless** technology being used.

Even though channels can handle more than one call simultaneously, if there are too many subscribers in a given cell at one time, the result can be a fast busy signal. If a subscriber already on the phone travels into a cell that is at capacity, the result can be a disconnected call.

Most cell sites cover transmissions in an area from 2 to 10 miles in diameter, depending on the terrain and other factors. Because the signals are transmitted at relatively low power (as low as 0.6 watts in digital **wireless** phones), channels can be reused in other cells without concern that there will be interference. A carrier with a limited number of channels can theoretically take on more subscribers by building more cells and reusing the channels.

Because the zeros and ones of a digital signal take up less space on a channel than do analog signals, digital **wireless** represents a boon to a channel-hungry **wireless** carrier. A digital cell can handle up to 10 calls per channel, several more calls per channel than an analog cell.

But some digital signals transmit at higher frequencies than analog signals and are more susceptible to energy loss as they travel between points. As a result, it takes more towers to carry the signals. That is a likely explanation for why digital **wireless** subscribers experience the most dropped calls while they're driving. The digital signal becomes weakened as the driver moves out of one cell, and it is not strong enough to be picked up immediately by the neighboring cell site.

Sometimes, however, it is not signal strength that is

the problem, but the lack of digital cell sites. Because analog sites cover areas containing an estimated 80 percent to 90 percent of the United States' population, while digital **wireless** is estimated to cover 60 percent, many **wireless** operators use the analog network as a fallback for digital customers.

But even when there is an analog cell in the area to default to, it's generally easier to hand off calls between digital cells than it is to hand off calls between digital and analog cells. A digital-analog handoff involves moving to a separate system as the signal is transmitted at the carrier's switching network. And if the analog transmission fails, the signal cannot be transferred back into digital mode.

In addition, **wireless** providers use different digital technologies that don't always hand off seamlessly between cells, particularly when a call is being relayed out of a cell in a subscriber's home coverage area and into the cell of another carrier, during a process known as roaming.

"We'd be so much better off if we had a couple of nationwide networks handing calls off to each other," said Nancy Gohring, **wireless** networks editor at Telephony, an industry trade magazine.

Radio frequency engineers at companies that manufacture base station equipment, like Lucent Technologies and Motorola, are constantly working on software upgrades to ease compatibility. Industry experts say the next generation of digital **wireless** will have a standard interface to improve the way different systems hand off calls to one another.

Kent Olson, an analyst at the Strategis Group, a telecommunications information services company based in Washington, estimates that it costs between $140,000 and $180,000 to build a single cell site. In any urban area, there is usually a high density of sites to accommodate a large number of users.

'What service?' a customer complains. 'I have no service.'

Wireless providers are looking for more economical ways to build their networks. One alternative to building a cell is to extend the signal by stringing a series of devices known as repeaters in areas between cells. Repeaters can amplify and extend a signal up to 10 or 20 miles. More and more, **wireless** carriers are also installing micro cells, which have lower power and fewer channels, in areas that are difficult to penetrate, like buildings and tunnels.

Repeaters and micro cells are cheaper, but they will not solve all coverage problems.

"Some structures will still be almost impossible to penetrate, given the high frequency and low power of the digital signals," said Richard Wong, a network engineer for Telus Mobility, a cellular provider in western Canada.

Another economical alternative to building more cell sites is to lease channels on another company's existing cell site, something that **wireless** carriers are becoming much more flexible about. Such consolidation is also a response to community zoning regulations, which often prohibit the construction of new towers.

Over the last couple of years, many carriers have sold their cell sites to companies including the Crown Castle Corporation, based in Houston, and Pinnacle Holdings, based in Sarasota, Fla.

These companies then lease the space to the carrier that used to own it, and to one or two others.

"With only two players in the market, there weren't the current issues with real estate and zoning," said Olson, of Strategis. "Now, with five or six players in each market, the carriers are much more likely to share tower space."

With the new generation of digital phones allowing limited Web access and e-mail already here and expanded **wireless** data services on the horizon, mobile phone use will only increase.

Will a time come when the digital **wireless** network fills up entirely?

"The potential for that exists, but it's not any kind of a reality at this point," said Mark Desautels, managing director of the **Wireless** Data Forum, a Washington-based trade organization. The Federal Communications Commission, he said, "has the ability to shift spectrum and allot additional bandwidth should that become necessary."

And despite the current coverage problems, experts believe that the carriers will be able to build themselves out of it.

"The good news is that this, too, shall pass," said Tom Wheeler, president and chief executive of the Cellular Telecommunications Industry Association.

"It took 75 years before wire line phone service had the same kind of coverage that the **wireless** carriers have achieved in a much shorter period. It's not where

it should be, but it's moving at lightning speed and improving every day."

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